ADAMS (A. W.)

Compliments of the Author

THE ELECTRIC LARYNGOSCOPE

BY

A. WELLINGTON ADAMS, M.D.

COLORADO SPRINGS, COLORADO.

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THE ELECTRIC LARYNGOSCOPE.

HAVING presented this remarkable little instrument to the medical profession, I shall offer here, in a succinct manner, a detailed account of its construction, so that any intelligent instrument maker, or skilled electrician, can make one; leaving the reader to refer to the *New York Medical Gazette* of May 22, 1880, or to the September number of my own journal (*Rocky Mountain Medical Review*), for an exposition of the disadvantages and imperfections of the *old* method, and the superior advantages of the *new* one.

I think, however, that to all skilled laryngoscopists its great value will be patent with this simple description.

There are two features about the "electric laryngoscope" giving it its excellency and, therefore, demanding immediate attention. These are: *First*, the application of what is the nearest approach to sun-light—the electric light—in such a way as to bring it under perfect subjection, that it may be easily manipulated; and *second*, the establishment of a permanent relationship between the source of light for illumination and the throat mirror.

These are accomplished after the manner about to be described: Mounted upon a hard rubber handle, in any way most convenient to the maker, is a brass arm, slit down the centre, and having a socket drilled in its free extremity; the latter for the reception of a brass ball which projects from the periphery of a circular brass cap or case, thus creating a ball-and-socket joint between the arm and cap just referred

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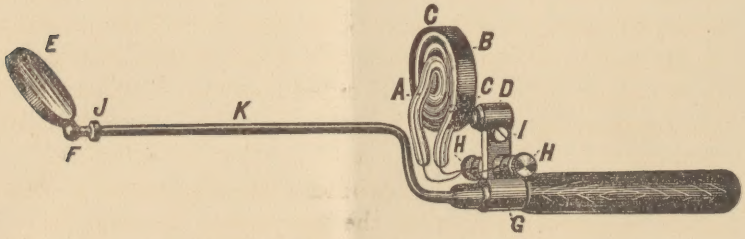
to. The aforesaid cap or case is for the reception of a glass carbonic acid vacuum tube, bent in the form of a spiral, and having a platinum wire hermetically sealed within it.

This tube is a slight departure from M. Sassiott's modification of Geissler's tubes. The tube is held in place by means of three delicate catches projecting inwardly from the sides of its case. In the back of this case, and behind the vacuum tube, is a plain concave mirror with a focal distance equal to the space between it and the position of the throat mirror, upon which it is intended to reflect the rays of light emitted by the spiral vacuum tube.

Over the base of the brass arm before referred to, are placed, one on either side, two small binding posts. These posts are in electrical communication with the platinum wires projecting from the extremities of the spiral vacuum tube.

Attached to one end of the aforesaid handle, is a shank, made of some light metal, and bent in such a way as to bring the throat mirror attached to its free extremity upon



ADAMS' ELECTRIC LARYNGOSCOPE [⅔].

(IN RHINOSCOPIC POSITION.)

A, Spiral vacuum tube; *B*, brass case for vacuum tube and concave reflector; *C*, *C*, catches for retaining reflector in place; *D*, ball-and-socket joint for illuminator; *E*, throat mirror; *F*, ball-and-socket joint for mirror; *G*, clasp, by means of which the light can be revolved around the handle of the mirror; *H*, *H*, binding posts for the wire from battery or induction coil; *I*, Brass arm, supporting the illuminating apparatus; *J*, sliding ring, to control ball-and-socket joint, *F*; *K*, shank of throat mirror.

a level with the spiral vacuum tube. The throat mirror just spoken of is attached to the distal end of the shank by means of a very delicate ball-and-socket joint, thus enabling an adjustment at any angle or position, the extremity of the shank forming the axis around which the mirror revolves.

A more lucid idea of the instrument as a whole, and of its various parts, may be had by reference to the illustration, where *I*, represents the brass arm projecting upward from the small end of the handle; *A*, the spiral vacuum tube, whence the light is emitted; *B*, the brass cap serving as a receptacle or case for the vacuum tube and concave mirror; *C*, *C*, the little catches for retaining the two latter in place, and which are formed by simply bending in small segments of the case here and there; *D*, the ball-and-socket joint for furnishing universal motion to the light; *I*, the screw for regulating the mobility of said joint; *H*, one of the binding posts for receiving the wires from the battery or induction coil;* *K*, is the shank which supports the throat mirror, *E*, by means of the delicate ball-and-socket joint at *F;* and *J*, represents a sliding ring regulating the mobility of this joint.

By this combination and arrangement, almost any desired relationship between the source of light and the throat mirror may be attained in the "twinkling of an eye," so to speak, and thus *retained* until the examination in any individual case shall have been completed. It must be borne in mind, that the entire arm supporting the light may be revolved upon the handle at *G*, so that when it is necessary in any particular case to place the shank of the instrument in the angle of the mouth, in order to secure a proper view, the beam of light will not be intercepted by the root of the tongue.

When the flexible wires (wound with silk, similar to those used in connection with the telephone) leading from a Ruhmkorff coil giving an inch spark, are connected with the binding posts, H, H, a *brilliant white light* is emitted from the glass spiral. *This light has neither heat nor gas, and is of such concentration and intensity as to so illuminate the respiratory tract, down to a point nearly an inch below the "bifurcation," that every detail in the larynx and trachea, down to that point, is sharply defined and brought out in bold*

* It will be remembered I have said there were two of these posts, one on either side, and that they were in electrical communication with the wires projecting from the two extremities of the spiral vacuum tube; in this figure the binding post of the opposite side is only partially in sight.

relief in the throat mirror; and if the latter be large and slightly concaved, any particular detail requiring special structural examination may thus be greatly magnified.

The induction coil for this light may be worked with only three cells of the Grenet battery, and both appliances may be placed any desired distance from the laryngoscope. For operating the instrument, I prefer, however, an equivalent number of the Léclanché cells, as this form of battery requires no special attention or renewal from one month to several years—according to use. Again, with the Léclanché battery, in order to stop action it is only necessary to break the continuity of the circuit, whereas with the other forms, the zincs must be removed.

What this little instrument accomplishes in rhinoscopy is truly marvelous. Heretofore the idea of procuring an image of the actual cavity of the nares has been more theoretical than practical. Not that the principles upon which the method is founded are erroneous, or the task much more difficult of accomplishment than in laryngoscopy, but simply because the light was too crudely adjusted and of insufficient intensity to illuminate the much *smaller* and *tortuous* passages of the nares.

In any subject where the anatomy or condition of the parts will at all admit of an examination, the electric laryngoscope will procure a brilliant and sharply defined rhinoscopic image that would surprise and brighten the face of the most accomplished operator.

All who have seen it declare it to be the greatest medical instrument ever yet invented; this, because of the magnitude of its accomplishments combined with its great *simplicity* and *novelty*.

This is really the only *veritable* "laryngoscope" ever yet produced.

Heretofore we have had only a *method* for examining the larynx and nares, not an *instrument* that we could pick up and say: "This is a laryngoscope, or this is a rhinoscope!" It is light, easily manipulated, is not liable to get out of order, and, taking it all in all, costs much less in the end than the Tobold paraphernalia.

Since using it in my own practice, I marvel at my ability to accomplish anything at all under the old method.

I have also applied the principle to otoscopy, resulting in the production of an otoscope without equal.

Both of these instruments were exhibited at the recent convention of the Colorado State Medical Society, where they met with an enthusiastic reception.

A description of the otoscope will appear in print, for the first time, in the September issue of the *Colorado State Medical Journal, Rocky Mountain Medical Review*, and in the printed "Transactions" of the Society likewise.

Measurements for constructing my instrument may be taken from the figure, which is ⅔ full size.

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